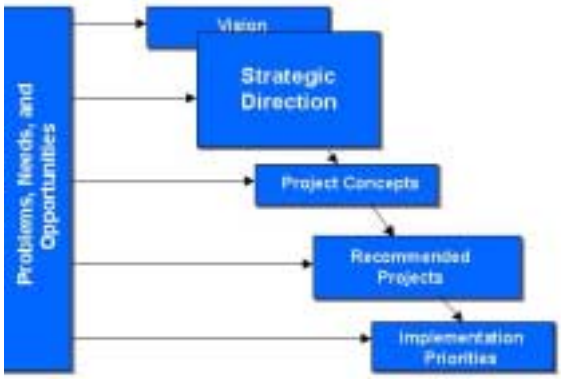
3.3 ITS STRATEGIC DIRECTION

3.3.1 ITS User Services - A Structure for the Strategy



The United States Department of Transportation (U.S. DOT) has developed a common framework for planning, defining, and integrating ITS across the nation – the National ITS Architecture. One aspect of this structure is called the ITS "User Services". User Services classify different types of potential ITS applications as defined by what ITS should do from the user's perspective, rather than by a specific technology. The term User Services was intended to convey the idea that ITS should help the transportation system user: someone who is traveling, shipping goods, or carrying goods from place to place. The concept of User Services allows system or project definition to begin by establishing the high-level services that will be provided to address identified problems and needs in the Central Coast Region. The User Service categories selected for the Central Coast ITS Strategic Plan include the following:

- Traffic Management and Safety
- Travel Demand Management
- Transit Management and Electronic Fare Payment
- Emergency Management
- Advanced Vehicle Control and Safety Systems
- Electronic Payment Systems
- Commercial Vehicle Operations
- Railroad/Highway Intersections
- Traveler Information
- Other ITS Application Areas
- Institutional/Organizational and Communications Elements

Please refer to Appendix C for a complete listing of the 31 User Services identified by the U.S. DOT.

3.3.2 The Overall ITS Strategic Direction

The ITS Strategic Direction for the Central Coast Region is based upon these selected User Services (above) and how they relate to identified transportation problem areas and Agency needs. Input was received throughout the Central Coast outreach program and problem identification process on this correlation as documented in "Working Paper #2 – ITS Vision for the Central Coast" (as found in Volume III – Project Documentation). Working Paper #2 presents the selected User Services in terms of objectives and vision statements that indicate the need(s) they specifically address. From these links, program statements were forwarded that serve as a bridge between the vision statement and the type of ITS applications suggested. In the paragraphs that follow, these program statements are listed under their respective User Services in order to characterize the Central Coast's overall ITS Strategic Direction.

The program statements serve as a bridge between the vision statement and the types of ITS applications suggested.

Traffic Management and Safety

Transportation Management Center. The Central Coast will strive to implement a cost-effective transportation management center (TMC) in the near-to mid-term time frame. Its function will be to focus regional traffic management and traveler information for distribution via multiple outlets supporting tourism, goods movement, agriculture, emergency services, and other users within the region. The TMC will be able to exchange information with other TMCs within the state and will be coordinated with the development of local emergency operations centers. The TMC will be supported by strategically placed field devices that will allow truck drivers, tourists, and other travelers to make route choices with the knowledge of road and traffic conditions. Cooperative, multi-county efforts with the media for information dissemination will also be pursued.

Ramp Metering. In order to improve traffic flow and decrease congestion on the freeway system, the Central Coast will install ramp meters at selected locations. Ramp meters will control the flow of vehicles onto the roadway, thereby proactively managing congestion before it becomes a bottleneck. Various metering strategies will be developed between Caltrans and the local agencies to balance traffic flow on both the freeway and arterial networks.

Arterial Signal Coordination. The coordination of arterial traffic signals and upgrade of signal systems to provide efficient arterial traffic flow is a common objective among all counties in the Central Coast. The interconnection of city/county systems with Caltrans signals and interconnection of signals across the boundaries of adjacent cities should be pursued to facilitate traffic flow on major arterials.

Expansion of Cellular Phone Networks. The Central Coast will take advantage of innovations and advances in communications technologies to promote public safety. This will include work with the private sector to expand cell phone communications networks, and improved radio systems for emergency response.

Safety Applications. The Central Coast seeks to enhance the safety of its roadway network through ITS in several ways. One primary method will be a management approach that allows Caltrans, CHP, local law enforcement, and other emergency service agencies to monitor, share, and dispatch resources in a coordinated manner to improve incident response activities. Another is the use of roadside safe speed advisories that warn motorists of impending adverse travel conditions (e.g., low visibility, sharp curve, steep grades, etc.)

The Internet. Agencies in the Central Coast view the Internet as a key vehicle for sharing information among agencies and with the public and will support Internet applications as a cost-effective approach to distributing multi-modal traveler information.

Advanced Crosswalks. Improving intersection safety for both motorist and pedestrians is also a key concern in the Central Coast. Many counties have heavy foot traffic in their downtown areas and need methods to visibly indicate pedestrian presence in the crosswalks to oncoming vehicles, especially at night.

Travel Demand Management

Trip Planning. Agencies in the Central Coast will use transportation information and trip planning systems, including automated rideshare matching, to encourage travelers to use transit, ridesharing, and non-motorized modes of travel.

Intermodal Coordination. Agencies in the Central Coast will use ITS applications, where appropriate, to facilitate coordination among modes and provide for efficient modal transfer.

Transit Management and Electronic Payment

Smart Cards. For applications of smart cards and other electronic payment systems, the Central Coast will strive to implement systems that allow for payment for multiple services using a single card or device.

Transit Operations and Management. Transit agencies in the Central Coast will employ ITS applications to improve transit system efficiency, public information, timeliness of service, and internal record-keeping and management systems. Where individual transit systems interface, ITS will be used to enhance the timeliness of modal transfer.

Emergency Management

Emergency Communications. The CHP, local law enforcement, and other emergency service agencies should upgrade communications throughout the region to facilitate interagency management of traffic accidents, incidents, and other emergency events.

Call Boxes. Use of call boxes for motorist assistance and incident notification is a priority for all counties, with the possibility of upgrading to "smart call boxes" in selected areas to support data collection and planning functions.

Emergency Response Plans. The CHP, local law enforcement, and other emergency service agencies should use ITS, where appropriate, to facilitate the implementation of operating procedures and response plans that can be used in the event of emergencies.

Signal Pre-Emption and Mayday Systems. The CHP, local law enforcement, and other emergency service agencies should work with Caltrans and local traffic agencies to facilitate the implementation of ITS applications, such as emergency vehicle priority of traffic signals, that can improve emergency response. In addition, mayday systems have the potential in rural areas to dramatically reduce response times to collisions, and as the number of deployed systems grows, emergency service providers must be in a position to fully respond to mayday calls.

Advanced Vehicle Control and Safety System

Support of Private Sector Initiatives. Where appropriate, agencies in the Central Coast will support private sectors efforts to develop and implement advanced vehicle control and safety systems.

Electronic Payment Systems

Compatible Payment Systems. For applications of smart cards and other electronic payment systems, the Central **Coast** will strive to implement systems that allow for payment for multiple services using a single card or device.

Commercial Vehicle Operations

Goods Movement. Agencies within the Central Coast Region will work in partnership with trucking and agriculture industries to pursue ITS applications that facilitate goods movement and vehicle safety.

Railroad/Highway Intersections

Improved Warning at Grade Crossings. Where appropriate, agencies in the Central Coast will work with the railroad industry to provide improved motorist warning through ITS.

Traveler Information

(See statements under the Traffic Management and Transit Management categories)

Tourism. Agencies in the Central Coast will rely upon and work with the tourism industry and business groups to facilitate the provision of information to all travelers, with emphasis on tourists and visitors to the region.

Weather and Closure Information. Agencies in the Central Coast will strategically examine and employ ITS applications to identify and provide warning for roadway closures, flooded areas, weather problems, and other unexpected events to reduce inconveniences to the public.

Train Arrival Information. Agencies in the Central Coast will strive to provide information on train arrival times, connections to other modes, and other information at AMTRAK rail stations, especially unmanned stations

Other ITS Application Areas

Maintenance. Caltrans and county maintenance agencies will promote the development and acquisition of technologies to improve maintenance efficiency.

Planning Data. Use of ITS to provide data for planning and system operations is a need for all counties.

Institutional/Organizational/Communications Elements

Shared Applications. ITS applications will be shared among agencies, where practical, to foster inter-agency communications and operations, and to gain economies of scale. Potential shared application areas include Automatic Vehicle Location (AVL) technology and communications systems.

Compatible Standards. The Central Coast will employ systems, standards, and protocols being developed in other metropolitan and rural regions to ensure compatibility and minimize cost. For the most part, the Central Coast will not be the originator of ITS applications in California but the user of cost-effective applications developed and tested elsewhere in the state.

Continuing Interagency Coordination. Agencies in the Central Coast recognize that continued interagency dialogue among the counties, with Caltrans, CHP, and other agencies is critical to cost-effective achievement of the vision. Interagency coordination and communications will continue after the planning stage to guide project selection and implementation.

Communications Infrastructure. The Central Coast will support efforts of the private sector to provide economical wireless communications capabilities to and from any point in the region to support emergency service functions and communications with a wide range of electronic devices.

The Central Coast ITS Strategic Plan sees technology as an enabler, as a means to deliver transportation services more effectively. But ITS technology must be applied in the right locations, at the right time, and in the right way. It must be targeted to specific, identified needs. Transportation dollars are scarce, and investments in ITS must leverage those dollars to achieve the transportation objectives of the Central Coast. The investments must be thought through in the context of the entire life cycle of the expenditure, not committing to more than it is possible to operate and maintain.

ITS technology must be applied at the right locations, at the right time, and in the right way. It must be targeted to specific, identified needs.

3.3.3 Strategic Direction for the Central Coast Region

In the Central Coast, the goal is to ensure that all of these ITS vision and/or program statements are taken into account when programming particular transportation plans (e.g. RTP, STIP, STP, etc.). Although there are elements of all of the above ITS strategies that are part of the Strategic

Plan, several could be considered as part of the core of the strategic direction at a regional level. These are identified as areas of emphasis, not to the exclusion of other strategies. Each county will have its own priorities and areas of emphasis. Core elements of the regional strategic direction include:

A cornerstone of the ITS Strategic Plan for the Central Coast is the development of a **Transportation Management Center (TMC)**. A TMC can involve a variety of elements, but is typically associated with a situation where conditions in the field are monitored and decisions are made concerning traffic management, traveler information, incident response, and public safety. A TMC in California involves a partnership of Caltrans and the CHP. Up to this point, planning for the Central Coast has focused on the development of a "satellite" TMC. The recommendation in the Strategic Plan is to move forward with a more fully functional TMC that has many of the elements of a TMC in a more urban setting, but that is tailored to the urban and rural character of the Central Coast. Personnel in charge of the TMC would:

Monitor traffic flow through roadway sensors and **CCTV cameras** at strategic locations

Control **ramp meters** installed in congested freeway sections to help traffic flow more smoothly

Serve as a focal point for regional traveler information that would include, for example, sending messages to strategically placed roadside **changeable message signs (CMS)** or **highway advisory radio (HAR)** systems and providing traveler information to kiosks located at rest areas, truck stops, etc. to allow long-distance traffic to avoid major incidents and road closures

Coordinate communications with the CHP to more rapidly respond to traffic incidents and better perform **incident management** activities

Caltrans and CHP will jointly plan for and develop the Central Coast TMC which will be located, at least temporarily, in San Luis Obispo and would have the capability for transfer of control to TMCs in either the San Francisco Bay Area or Southern California. For example, due to existing partnerships already established in the region, the Caltrans District 4 TMC (Bay Area) will have primary control over SR 17 and portions of SR 1 in Santa Cruz County. In these instances, the Central Coast TMC would have secondary control over these roadway segments. Decisions on the functions and capabilities of the Central Coast TMC will be made by Caltrans and CHP, with input from Regional and Local agencies.

Other ITS strategic directions recommended in this Plan include:

Increasing the availability and quality of multi-modal **traveler information** (e.g. roadway conditions, transit schedules, rail/train arrival times, tourism activities, etc.) generally by making regional and local information available over the Internet and telephone call-in systems

Improving traffic flow along roadways through **signal upgrades**, communications enhancements, and coordination strategies

Providing for a consistent **"smart card"** approach to provide for seamless operation among transit systems, parking systems, toll operations, and other transaction-based systems

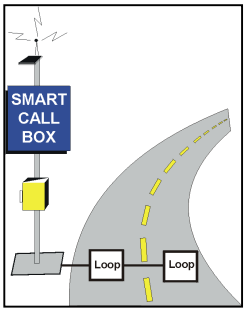
Encouraging and working with communications companies to expand **cellular phone coverage** into more rural areas to more broadly support a range of information delivery options and possible "mayday" applications

Support of enhancements and upgrades to CHP and emergency response agency **radio systems**

Improve emergency vehicle response times and transit vehicle schedule adherence through **traffic signal priority/pre-emption systems**

Use of the **Internet** to maximum potential to foster the sharing of information among agencies and with the public

Expanding the **motorist aid call box system** on targeted roadways in the Central Coast



Use of **"smart" call boxes** at selected locations that equip existing call boxes with roadway and/or weather sensors

3.3.4 Strategic Direction at the County Level

The previous section described the overall strategy for the Central Coast Region as a whole. Many of these strategies apply equally to all areas and agencies in the region. Examples include those related to emergency management (e.g., call box systems), improved communications, and enhanced data collection. In other cases, specific strategies may have greater importance for an individual county or agency. This may be a function of the individual county's characteristics or the agency's responsibilities. Furthermore, the detailed planning, programming and implementation of most ITS applications are likely to occur at the agency or county level. For these reasons, the following set of ITS strategies was developed for key regional agencies and the individual counties in the Central Coast. A separate set of strategies has been developed for Caltrans and the CHP to reflect their key role as regional agencies.

These brief statements are intended to identify those ITS areas that may be emphasized by each of the counties and regional agencies. The strategy for an individual county or for one of the regional agencies should be considered as a combination of both the regional strategy and the individual county strategy. The individual county and Caltrans/CHP vision statements are

intended to amplify particular areas of emphasis, not to exclude areas that are not emphasized. It is the expectation that these strategies will be reflected in the next update of the respective county and agency transportation plans. As desired, each agency/county may refine these statements as part of their planning efforts to better articulate the specific vision for their agency/county. Priority projects for the counties are listed later in this Chapter, based in part on the county-level strategies.

3.3.4.1 Caltrans and CHP

Caltrans District 5 and the CHP will place particular emphasis on ITS applications in the areas of traffic management and freeway operations on state highways, safety systems, major incident management/response, emergency preparedness, and weather warning systems. In addition, Caltrans will emphasize coordination of state signals with local signals, long distance traffic diversion/information, and highway maintenance. Since CHP's jurisdiction extends to county roads, they will also support safety-related ITS applications, and others appropriate to their mission.

In addition, Caltrans and the CHP recognize the need to coordinate traveler information, emergency operations, and traffic management functions through the deployment of the Central Coast Regional TMC. This coordination should involve an integration of information sources from the counties, Caltrans, and CHP. It should involve integrated decision making in emergencies and major incident responses and coordination with existing emergency operations centers. Information should be exchanged with all of the regional transportation agencies in the region as well as the Bay Area and Southern California TMCs. It is envisioned that the coordination will occur not only geographically but also across both state and local highway systems as well. The development of this capability in the Central Coast TMC should be a joint effort of Caltrans, CHP, and local agencies. Caltrans also envisions the enhancement of AMTRAK service and other inter-city rail initiatives with ITS applications that improve intermodal connectivity, system efficiency, safety and traveler information, with emphasis on information at unmanned rail stations.

3.3.4.2 Santa Cruz County

The emphasis of ITS applications in Santa Cruz County will be on managing the commuter and recreational congestion on SR 17 and SR 1. In addition, emphasis will be placed on rural highway safety applications, upgrades to traffic signal systems, traveler information to support tourism, and improved transit operations through smart cards and Automatic Vehicle Location (AVL) systems.

3.3.4.3 San Benito County

San Benito County will emphasize ITS applications that support the management of traffic congestion on US 101, SR 25, and SR 156. In addition, the County will promote ITS applications that improve rural highway safety and traffic signal coordination.

3.3.4.4 Monterey County

The emphasis of ITS applications in Monterey County will be on information to support tourism, upgrades to traffic signal systems, use of AVL to support transit operations, and safety applications on rural highways. Public/private partnerships should also be explored to identify ITS applications that support commercial vehicle operations, particularly agricultural goods movement. Emphasis will be placed on providing information to the trucking community to optimize freight routing and management.

3.3.4.5 San Luis Obispo County

The emphasis of ITS applications in San Luis Obispo County will be on information to support tourism, upgrades to traffic signal systems, advanced pedestrian crossings, use of AVL and smart cards to support transit operations, improved ridesharing applications, and rural highway safety. The county envisions the enhancement of AMTRAK service and other inter-city rail and bus initiatives with ITS applications that improve intermodal connectivity and service to the county. Another area of emphasis is that of support systems that can aid in hazardous material incident response and evacuation, including those applications that can used with the San Luis Obispo County/Cities Nuclear Power Plant Emergency Response Plan.

3.3.4.6 Santa Barbara County

Santa Barbara County will place a strong emphasis on ITS applications that enhance travel safety. The county will also promote ITS strategies that reduce congestion levels throughout the county and lead to more efficient operation of the transportation system. Potential applications include upgraded signal systems, traffic management on US 101 in the South Coast, and traveler information systems to support local residents and the tourist industry (e.g., roadway conditions, transit schedules/availability, rail operations status, etc.). Another area of emphasis is to enhance transit system operations by using ITS (e.g., "smart card" technology, AVL fleet management systems, vehicle sensors for fleet maintenance, etc.) A further area of emphasis is the development of support systems to aid in HazMat incident response and evacuation. Finally, the county envisions the enhancement of AMTRAK service and other inter-city rail and bus initiatives with ITS applications that improve inter-modal connectivity and service to the county.